

AMENDMENTS TO THE DRAWINGS

The figure submitted herewith for addition to the specification is a cross-sectional view of a capacitor in accordance with the invention, including anode 1, dielectric layer 2 and cathode 3. This drawing is submitted pursuant to 37 C.F.R. § 1.83 and the Examiner's request for a drawing which illustrates the features of the invention as specified in the claims. No new matter has been added.

Attachment: New Sheet (drawing)

REMARKS

Claim 1 has been amended to recite a semiconductor layer formed on the electric conductor by energization in a semiconductor layer-forming electrolytic solution. Support is found at page 12, line 17-page 13, line 11. Claim 1 has also been amended to recite that the claimed method comprises immersing the impregnated electric conductor into the electrolytic solution, and passing an electric current through the electrolytic solution to form a semiconductor layer on the impregnated electric conductor. Support is found at page 14, lines 6-20 and at page 18, lines 6-22 of the specification.

Preliminarily, the Examiner advises that reference to US 2003/133256 as submitted in the Information Disclosure Statement filed June 5, 2009 has been lined-out on account of an incorrect publication number. The publication number used in Form SB/08 is consistent with the way it is given in the supplementary European Search Report. In any event, the subject reference US 2003/0133256 is of record as listed in Form PTO-892 (Notice of References Cited by the Examiner).

Review and reconsideration on the merits are requested.

In response to the objection to the specification, Applicants submit herewith a drawing for addition to the specification showing a capacitor including the features of an electrode (anode), dielectric layer and other electrode (cathode) representative of the capacitor of the invention. The specification has also been amended to include a description of the drawing. This drawing is submitted pursuant to 37 C.F.R. § 1.83. No new matter has been added.

Withdrawal of the objection is respectfully requested.

The Examiner objected to claim 2 as not further limiting the subject matter of claim 1 from which it depends.

Applicants respectfully disagree. As claimed in claim 1, the concentration of precursor in the pores of the electric conductor is higher than the concentration of precursor in the electrolytic solution (which could be 0, or a concentration higher than 0 as long as it is less than the concentration of precursor in the pores). As claimed in claim 2 depending from claim 1, the electrolytic solution does not contain the precursor. Thus, claim 2 does limit the subject matter of claim 1 from which it depends, and withdrawal of the foregoing objection is respectfully requested.

Claim 1 was rejected under 35 U.S.C. § 112, second paragraph, as lacking adequate antecedent basis for “pores” in line 4.

In response, claim 1, line 4 has been amended to recite “the method comprising impregnating the pores of the electric conductor with a semiconductor layer-forming precursor before energization to render the concentration of semiconductor layer-forming precursor in the pores higher than that of the semiconductor layer-forming precursor in the electrolytic solution.”

It is respectfully submitted that the amendment to claim 1 provides proper antecedent basis for “pores,” and withdrawal of the foregoing rejection is respectfully requested.

Claims 1, 3, 5, 8, 10-14, 19, 21 and 22 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 6,088,218 to Hamada et al. Hamada et al was cited as disclosing a method meeting each of the limitations of the rejected claims, including impregnating pores with a semiconductor layer-forming precursor prior to energization so as to render the concentration of the precursor in pores higher than that of the precursor in the electrolytic solution (citing col. 7, lines 60-67; col. 9, lines 55-67; and col. 10, lines 1-8 and 9-21).

Applicants respond as follows.

The method of producing an electrolytic capacitor of Hamada et al comprises dipping a porous body of a valve metal having an oxide film on a surface thereof in a monomer solution; lifting the porous body from the monomer solution and dipping the porous body in an oxidizing solution; and lifting the porous body from the oxidizing solution and allowing the porous body to stand (Abstract). There is no disclosure of "a semiconductor layer formed on the electric conductor by energization in an electrolytic solution" as recited in claim 1.

To yet further distinguish over Hamada et al, claim 1 has been amended to positively recite the step of energizing in an electrolytic solution.

Because Hamada et al does not disclose or suggest each of the limitations of the claimed invention, namely, a semiconductor layer formed on the electric conductor by energization in an electrolytic solution, Hamada et al does not anticipate the present claims and withdrawal of the foregoing rejection under § 102(b) is respectfully requested. The rejection should be withdrawn for this reason alone.

Further, as shown in Table 1 and described at page 32, lines 9-18 of the specification, as seen from a comparison between Example 1 and Comparative Example 1 and between Example 2 and Comparative Example 2, when the pores are impregnated with the precursor before energization and the concentration of the precursor in the pores is rendered higher than the concentration of precursor in the electrolytic solution, a capacitor exhibiting a good capacitance appearance factor and a low ESR value can be obtained. Thus, the present claims are also patentable over Hamada et al.

Claims 1, 3-5, 8 and 10-24 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 6,660,188 to Ohata.

Applicants respond as follows.

The cited passage at col. 19, lines 3-11 discloses impregnating the pores with an oxidizing agent having a polymerization initiating ability which is different from impregnating the pores with a semiconductor layer-forming precursor as required by present claim 1. It is only afterwards that the impregnated foil is then immersed into a monomer-containing solution for forming a semiconductor layer thereon. The operation including immersing in Solution 1 (oxidizing agent) and Solution 2 (monomer solution) is repeated until oxidative polymerization is carried out to form an electroconductive polymer layer (Example 1, col. 21, lines 40-53). Similar to Hamada et al, there is no disclosure of forming the semiconductor layer by energization in an electrolytic solution as required by present claim 1. The reference to chemical forming treatment, for example, at col. 21, lines 35-39 relates to forming an oxide layer (i.e., a dielectric layer) on the aluminum foil (anode), and has nothing to do with forming a semiconductor layer on the dielectric layer.

Ohata et al does not disclose or suggest each of the limitations of the claimed invention and therefore does not anticipate the present claims. Withdrawal of the foregoing rejection under 35 U.S.C. § 102(e) is respectfully requested.

Claims 2, 4, 6, 7, 23 and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hamada et al in view of US 2003/0007318 A1 to Kojima. The Examiner cites paragraphs [0005], [0025] and [0066] as teaching various features of the rejected claims.

Applicants respond as follows.

Paragraph [0005] of Kojima et al relates to the use of an electrically conductive polymer as an electrolyte in a soluble electrolytic capacitor, and has nothing to do with forming an electrically conductive polymer in an electrolytic solution by energization. Paragraph [0025] discloses forming a dielectric oxide film on a valve metal, which may be a tantalum foil or a

niobium foil, by anodic oxidation, and has nothing to do with forming a semiconductor layer on the dielectric layer. Paragraph [0066] concerns electric parameters, and likewise has nothing to do with the claimed method.

Similar to Ohata et al, the semiconductor layer in Kojima et al is formed by a repetitive chemical oxidation polymerization process as described in paragraph [0043] of Example 1. There is no disclosure here of forming the semiconductor layer by energization in an electrolytic solution.

Thus, Kojima et al does not remedy the deficiencies of Hamada et al, and withdrawal of the foregoing rejection under 35 U.S.C. § 103(a) is respectfully requested.

Claims 2, 6 and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ohata et al in view of Kojima et al.

Applicants rely on the response above with respect to the rejection of Hamada et al in view of Kojima et al. Withdrawal is respectfully requested.

Claims 9 and 22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ohata et al.

Applicants rely on the response above with respect to the rejection of claims 1, 3-5, 8 and 10-24 over Ohata et al. Withdrawal is respectfully requested.

Claim 9 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Hamada et al in view of US 2003/0133256 A1 to Yoshida.

Applicants rely on the response above with respect to the rejection over Hamada et al alone. Withdrawal of the foregoing rejection under 35 U.S.C. § 103(a) is respectfully requested.

Claims 15-18 and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hamada et al in view of U.S. Patent 6,934,146 to Omori.

Applicants rely on the response above with respect to the rejection of claims 1, 3, 5, 8, 10-14, 19 and 21-22 over Hamada et al alone. Applicants further comment as follows.

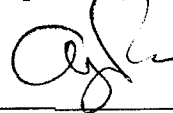
Similar to Ohata et al, the semiconductor layer is formed by dipping a niobium sintered body having formed thereon a dielectric layer in a solution containing an oxidizing agent (Solution 1) and subsequently dipping the sintered body in a solution containing a monomer and dopant (Solution 2), to thereby form an electrically conducting polymer layer on the surface of the sintered body. See col. 17, lines 1-15. There is no disclosure of first impregnating the pores of the anode having a dielectric formed thereon with a precursor, followed by energization in an electrolytic solution to form the semiconductor layer as required by present claim 1. Thus, the combination of Hamada et al and Omori et al also does not achieve the present invention.

Withdrawal of all rejections and allowance of claims 1-23 is earnestly solicited.

In the event that the Examiner believes that it may be helpful to advance the prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Abraham J. Rosner
Registration No. 33,276

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: December 22, 2009